

PATENT  
Atty. Dkt. No. 113692CON-1

### **REMARKS**

In view of the following discussion, the Applicants submit that none of the claims now pending in the application are obvious under the provisions of 35 U.S.C. §103. Thus, the Applicants believe that all of these claims are now in allowable form.

#### **I. REJECTION OF CLAIMS 42, 49 AND 50 UNDER 35 U.S.C. § 103**

##### **A. Claims 42 and 49**

The Examiner has rejected claims 42 and 49 in the Office Action under 35 U.S.C. § 103 as being unpatentable over Lu, et al. (US Patent 5,880,865, issued March 9, 1999, hereinafter referred to as "Lu".) in view of Rideout, et al. (US Patent 5,880,863, issued March 9, 1999, herein referred to as "Rideout".) or in view of Brown, et al. (US Patent 6,523,177, issued February 18, 2003, herein referred to as "Brown".) Applicants respectfully traverse the rejection.

Lu teaches a wavelength division multiplexed network having broadcast capability. Lu teaches a WDM network that combines switched signals and a broadcast signal with a combiner. (See Lu, Col. 4, Line 58 - Col. 6, Line 16.) The combined signal is then fed into another splitter/combiner that includes various demultiplexers and signal splitters. (See *Id.*)

Rideout teaches a reconfigurable ring system for the transport of RF signals over optical fibers. Rideout teaches a base station that feeds a signal into a remoting host unit that in turn, passes the signal to a remote unit. (See Rideout, Figure 2.) The signal is passed around multiple remote units and returned to the host unit. (See *Id.*)

Brown teaches a cable television system with digital reverse path architecture. A headend, hub site and node form a reverse path architecture. (See Brown, Col. 2, Line 51 - Col. 3, Line 15.) RF signals are inputted and combined before being transmitted over an analog optical transmitter. (See *Id.*)

The Examiner's attention is directed to the fact that the alleged combination (as taught by Lu) fails to teach, show or suggest "a mini fiber node for receiving optical signals from a mux node, where the mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection",

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as positively claimed by Applicants' independent claims 42 and 49. Specifically, Applicants' independent claims 42 and 49 recite:

42. A communication system, comprising:

a mux node including a first lightwave interface device for communication with a head end, said mux node further including a second lightwave interface device for transmitting a plurality of optical signals, wherein at least two of the optical signals include both analog and digital signals, wherein said mux node includes a radio frequency signal compiler that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber nodes; and

a mini fiber node including a third lightwave interface device for receiving said optical signals from said second lightwave interface device of said mux node, said mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection. (Emphasis Added.)

49. A network node that communicates between a head end and a plurality of mini fiber nodes, comprising:

a first lightwave interface device for communication with a head end;

a second lightwave interface device for transmitting a plurality of optical signals to a respective plurality of mini fiber nodes, wherein each of the plurality of mini fiber nodes being configured to communicate analog and digital signals to end user equipment via a wired connection, wherein at least two of the optical signals include both analog and digital signals; and

a radio frequency signal compiler that enables frequency division multiplexing of a plurality of upstream signals received from a corresponding plurality of mini fiber nodes. (Emphasis Added.)

Applicants' invention teaches a mini fiber node for receiving optical signals from the mux node, said mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection. Specifically, one or more mux nodes receive signals from a head-end and forward the signals to one or more mini fiber nodes, which then forward the signals to the users. Applicants' use of mux nodes and mini fiber nodes reduces the number of optical fibers required to be connected to the head-end, thereby providing various advantages, e.g., increasing reliability and reducing power consumption. (See Applicants' Specification, Page 1, Line 18 – Page 3, Line 25.)

The alleged combination (as taught by Lu) fails to teach, show or suggest a mini fiber node for receiving optical signals from the mux node, said mini fiber node being

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further configured to communicate analog and digital signals to end user equipment via a wired connection. The Examiner asserts that the ONU of Lu is a mini node.

Applicants respectfully disagree.

First, Lu states that:

"In accordance with the present invention, the problem is solved by interconnecting the ONUs, using a separate distribution facility, and sending the broadcast signal to only one selected ONU. This selected ONU then relays the broadcast signals to the other ONUs over the distribution facility." (See Lu, Column 1, lines 59-64, Emphasis added)

"The resulting optical signal is then sent to ONU1 610. At ONU1 a demultiplexer 611 separates the 1.5 micron switched signal from the 1.3 micron broadcast signal. As previously described, the optical broadcast signal is demodulated and converted by distribution module (DM) 612 into the type of signal needed for distribution over facility 620 to the other ONUs." (See Lu, Column 5, lines 11-14, Emphasis added)

Thus, clearly, Lu teaches that only one selected ONU receives the broadcast signal and that selected ONU only distributes the broadcast signal to other ONUs. As such, there is not a single ONU as taught by Lu that is for receiving optical signals from the mux node, said mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection, as positively claimed by the Applicants. In other words, the ONU that receives the broadcast signal only communicates with other ONUs, and the other ONUs do not receive the broadcast signal from the splitter 604 of Lu. This significant gap is not bridged by the teaching of Rideout or Brown. Specifically, both Rideout and Brown also fail to teach or suggest a mini fiber node for receiving optical signals from the mux node, said mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection. Thus the alleged combinations of Lu with Rideout and Lu with Brown fail to make obvious Applicants' independent claims 42 and 49. Therefore, the Applicants' invention is not obvious over the combinations of Lu and Rideout or Lu and Brown. As such, the Applicants respectfully request the rejection be withdrawn.

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**B. Claims 50**

The Examiner has rejected claim 50 in the Office Action under 35 U.S.C. § 103 as being unpatentable over Lu in view of Frigo, et al. (US Patent 5,521,734, issued May 28, 1996, herein referred to as "Frigo".) Applicants respectfully traverse the rejection.

The teachings of Lu have been discussed above. Frigo teaches a one-dimensional optical data arrays implemented within optical networks. A lowered cost optical network is achieved due to adoption of laser and receiver arrays in lieu of discrete transmitters and receivers. (See Frigo, Abstract.)

The Examiner's attention is directed to the fact that the alleged combination (as taught by Lu) fails to teach, show or suggest "a mini fiber node for receiving optical signals from a mux node, where the mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection", as positively claimed by Applicants' independent claim 50. Specifically, Applicants' independent claim 50 recites:

50. A network node that communicates between a head end and a plurality of mini fiber nodes, comprising:  
a first lightwave interface device for communication with a head end;  
a second lightwave interface device for transmitting a plurality of optical signals to a respective plurality of mini fiber nodes, wherein each of the plurality of mini fiber nodes being configured to communicate analog and digital signals to end user equipment via a wired connection, wherein at least two of the optical signals include both analog and digital signals; and  
a mux/demux/router component that is operative to receive electrical signals that have been converted from optical signals received from said head end, demultiplexes the received electrical signals, and forwards separate demultiplexed signals to said second lightwave interface device that transmits said separate demultiplexed signals to designated mini fiber nodes. (Emphasis Added.)

As discussed above, Lu teaches that only one selected ONU receives the broadcast signal and that selected ONU only distributes the broadcast signal to other ONUs. As such, there is not a single ONU as taught by Lu that is for receiving optical signals from the mux node, said mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection, as positively claimed by the Applicants. This significant gap is not bridged by the teaching of Frigo. Specifically, Frigo also fails to teach or suggest a mini fiber node for

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receiving optical signals from the mux node, said mini fiber node being further configured to communicate analog and digital signals to end user equipment via a wired connection. Thus the alleged combination of Lu with Frigo fails to make obvious Applicants' independent claim 50. As such, the Applicants respectfully request the rejection be withdrawn.

### Conclusion

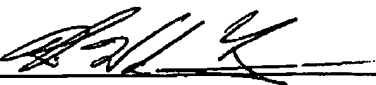
Thus, the Applicants submit that all of these claims now fully satisfy the requirement of 35 U.S.C. §103. Consequently, the Applicants believe that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring the issuance of a final action in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Kin-Wah Tong, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

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